



RESEARCH ARTICLE.....

Effect of 3-Nitro (3-Nitro-4-Hydroxyphenyl-arsonic acid 5% premix) on adult of rosy barb

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ABSTRACT..... In the present study the use of 3- Nitro in the dosage 3mg/kg diet was found to impart a stimulatory effect on growth and early maturation among the treated males and females. The treatment of 3 mg 3- Nitro per kg of diet resulted in a higher percentage of males (70%) as compared to that of 5 mg treatment group (65%) and control group (50%). The treatment of 3 mg 3- Nitro per kg of diet was proved to be the best.

KEY WORDS..... Length, Weight, Aquaria, Brood stock, Control

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INTRODUCTION.....

In pisciculture 3-Nitro (3-Nitro-4-Hydroxyphenyl-arsonic acid 5% premix) has a potential as a supplementary nonenergy food in rearing of seed (Belsare, 1978). The use of 3-Nitro has been proved to be beneficial in growth promotion in poultry.

3-Nitro have been found to be useful for rearing of post-embryonic stages of *Cyprinus carpio* when dissolved in water (Belsare and Belsare, 1976 and Belsare, 1977). It was found to improve growth and survival rate of Indian Major Carps, *Labeo rohita*, *Catla catla* and the common carp, *Cyprinus carpio* (Belsare, 1978). It was also found to have stimulatory effect on the growth and early maturation among the treated males and females of guppy, *Poecilia reticulata* (Palav, 1991).

In the present study 3-Nitro was used as an additive incorporating into the artificial diet to study its effect on growth and maturation.

The doses of 3 mg and 5 mg per kg diet were selected for rearing of 30 days old Rosy Barb for the period of 90 days. The controls were fed with same artificial diet without the additive. The feed ingredients are given (Table A). The observations for growth were recorded for every 30 days. Sex percentage and percentage of gravid females were also recorded after 90 days.

RESEARCH METHODS.....

Brood stock of Rosy barb were obtained from the local aquarium fish dealers of Ratnagiri. They were reared in the laboratory in 90 x 20 x 30 cm size glass aquaria for required experimental stage. The average length of fishes were 23.16 mm and average weight of fry were 138.50 mg. The new born fry were initially fed with freshwater zooplankton and acclimated to test diet 4 days prior to the commencement of experiment. As a source of live feed, freshwater zooplankton was mass

Table A : Different doses of 3 – Nitro incorporated diets and their ingredients				
Sr. No.	Feed ingredients	Control	3 – Nitro (3 mg/kg)	3 – Nitro (5 mg/kg)
		All values in (%)		
1.	Fish meal	20	20	20
2.	Prawn shell waste	40	40	40
3.	wheat flour	40	40	40

(a) Fish meal (bone less) : Crude protein 70 per cent (b) Prawn shell waste : Crude protein 7 per cent (c) Wheat flour : Crude protein 12 per cent

cultured using phased fertilization method (Shirgur, 1971) in plastic pool. Thirty days old Rosy barb were reared in the laboratory, in 90 x 20 x 30 cm size all glass aquaria.

Preparation of diet :

A special flake diet was prepared in the laboratory using different local ingredients such as bone less fish meal (20%), prawn shell waste (40%) and wheat flour (40%) (Table A). The powdered dry ingredients were passed through 0.5 mm mesh size, then they were weighed and mixed together in the mixer. The dry mixture was mixed in water and blended for 5 min. in a blender. This moistened mixture was cooked at 80° to 90° C till the slurry gets the binding property. The slurry was then cooled to ambient temperature ($29 \pm 1^\circ\text{C}$).

A required quantity of 3-Nitro was weighed on single pan balance according to required doses and was then dissolved in a small volume of distilled water. The insoluble substances were filtered out and the filtrate was collected and incorporated into the cooled slurry of diet. The control diet was prepared without addition of the hormone. The cooled slurry was spread on a polyethylene sheet with a smooth brush and dried under fans and flakes were prepared. The flakes were packed in airtight containers and stored at room temperature.

A monthly record of the total length and weight of each fish from each group was kept from 1st day to 90 days. The average weight and length for each group of fish were recorded. For the experiment 20 fry was used

for control group and treatment group and fed with flakes twice a day.

RESEARCH FINDINGS AND ANALYSIS.....

The observations on body length, body weight, average length and weight of males and females of each group are summarized (Table 1). The graphical representation of length and weight are given (Fig. 1).

The observations on body length and body weight did not show significant difference after 30 days, but the length and weight of the 3 mg treatment group was higher when compared with a 5 mg treatment group and control group. The 5 mg treatment group showed negative effect on the body length and body weight as compared to that of control group.

After 60 days of treatment the body length and body weight of the 3 mg treatment group showed an increase as compared to that of control and 5 mg treatment group.

After 90 days of treatment the body length and body weight of 3 mg treatment group showed higher growth as compared to that of control group. A negative effect in the body length and body weight was observed in the 5 mg treatment group when compared to that of control group.

The observations on percentage of males after 90 days of treatment revealed a significant difference as compared to that of control. 70 per cent of males were observed in the 3 mg treatment group after 90 days as compared to that of control group which had 50 per cent

Table 1 : Effect of 3 – Nitro on adults of <i>P. Conchonius</i>							
Sr. No.	Observations	Control		3 – Nitro (3 mg/kg)		3 – Nitro (5 mg/kg)	
		L (mm)	w (mg)	L (mm)	w (mg)	L (mm)	w (mg)
1.	0 days	23.16 \pm 0.00	138.50 \pm 0.00	23.16 \pm 0.00	138.50 \pm 0.00	23.16 \pm 0.00	138.50 \pm 0.00
2.	30 days	28.05 \pm 0.54	274.70 \pm 15.79	29.15 \pm 0.55	302.85 \pm 0.00	28.00 \pm 0.53	261.85 \pm 11.39
3.	60 days	31.40 \pm 0.69	411.30 \pm 26.85	32.65** \pm 0.60	482.95 \pm 27.09	31.06 \pm 0.67	403.83 \pm 21.39
4.	90 days	33.75 \pm 0.65	489.06 \pm 33.47	35.00 \pm 0.61	528.36 \pm 149.78	33.08 \pm 0.83	475.36 \pm 37.97
5.	Male (%)	50		70		65	
6.	Gravid female (%)	50		30		35	

ABBREVIATIONS -> \pm Standard error of mean

*, ** and *** indicate significance of values at P<0.05, 0.01 and 0.1, respectively

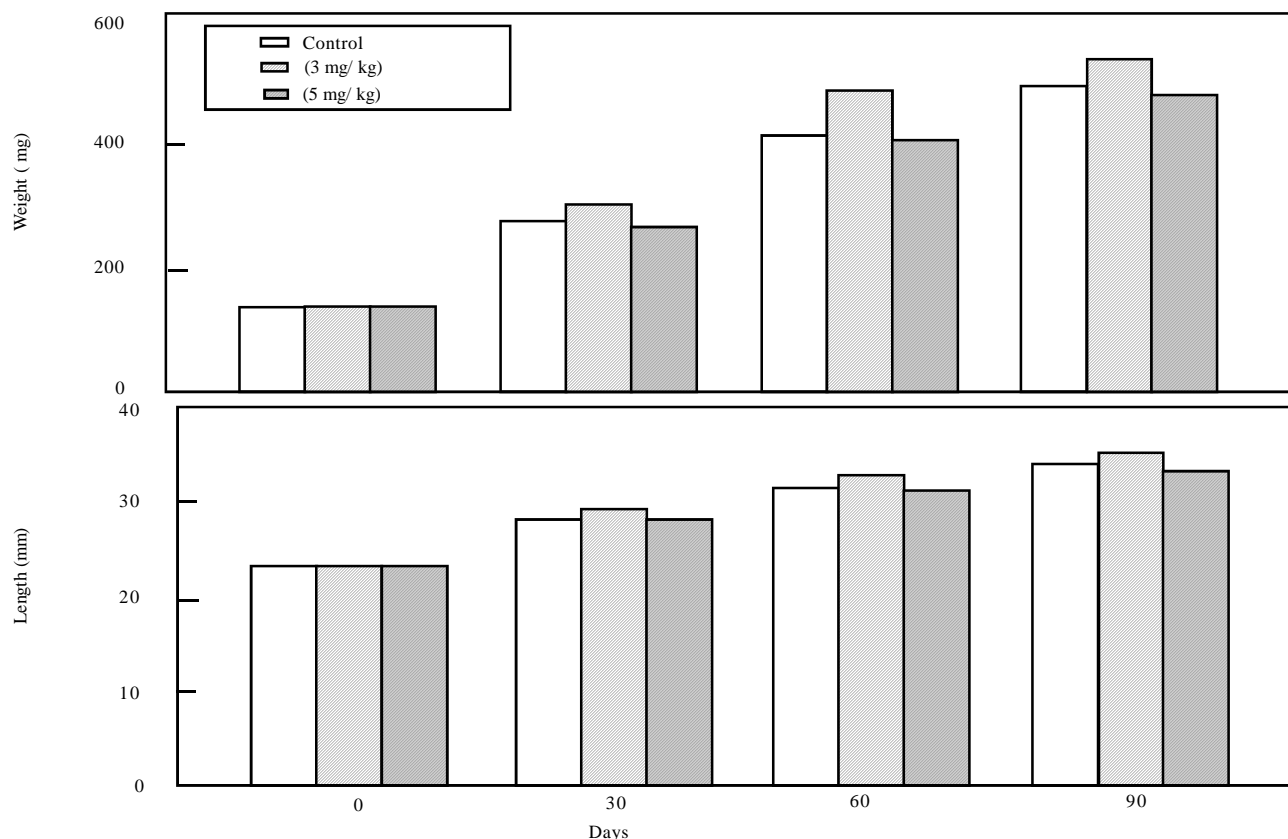


Fig. 1 : Effect of 3-Nitro on adults of *P. conchoniensis*

of males and 5 mg treatment group resulted in 65 per cent of males.

A lower percentage of gravid females were recorded among 3 mg and 5 mg of treatment groups as compared to that of control. The percentage of gravid females was found to be 50 per cent in the control, 35 per cent in the 5mg treatment group and 30 per cent in the 3 mg treatment group.

The fully matured males and females were observed after 90 days of treatment among 3 mg and 5 mg treatment groups. The gonado-somatic-index value which was calculated after 90 days of treatment was 1.6355 in case of males and 7.2069 in case of females in control medium.

In the 3 mg treated group the GSI value was 2.2295 in case of males and 10.0223 in case of females. In the 5 mg treated group the GSI value was 1.4191 in case of males and 4.2594 in case of females.

Belsare and Belsare (1976) reported the use of 3-Nitro in survival and growth of postembryonic stages of *Cyprinus carpio*. Belsare (1978) reported the use of 3-Nitro by mixing it directly in the rearing medium to

improve survival rate and growth from spawn to fry rearing in Indian Major Carps, *Labeo rohita*, *Catla catla* and *Cyprinus carpio*. In the present study the use of 3-Nitro in the dosage 3mg/kg diet was found to impart a stimulatory effect on growth and early maturation among the treated males and females. The treatment of 3 mg 3-Nitro per kg of diet resulted in a higher percentage of males (70%) as compared to that of 5 mg treatment group (65%) and control group (50%). The treatment of 3 mg 3-Nitro per kg of diet was proved to be the best.

The calculated gonado-somatic-index values of the 3 mg treated group were found to be significantly higher ($p < 0.05$) as compared to that of control in case of males and significantly higher ($p < 0.001$) in case of females as compared to that of control.

The calculated GSI values of the 5 mg treated group was not significant in case of males but were significantly higher ($p < 0.001$) in case of females as compared to that of control.

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